

A REPORT OF *CYPERUS GRAYIODES* AND  
*CYPERUS RETROFLEXUS* (CYPERACEAE) NEW  
TO MISSOURI AND NOTES ON OTHER  
SELECTED MISSOURI *CYPERUS*

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ABSTRACT

Field work in southeastern Missouri during 1989 and 1990 has resulted in a number of noteworthy *Cyperus* records. *Cyperus grayioides* and *Cyperus retroflexus* are reported new to Missouri. Also, additional records of *Cyperus croceus* and *Cyperus*  $\times$  *mesochorus* and two previously unknown *Cyperus* hybrids are reported.

INTRODUCTION

Our investigation has been centered on a system of dry sandy ridges and rises in Mississippi, New Madrid, and Scott counties of southeastern Missouri. This part of Missouri is located in the Mississippi Embayment, a northward extension of the Gulf Coastal Plain (Fenneman 1938, Walker and Coleman 1987). Soils of the Scotco series [previously classified as Crevasse series] occur on and along these prominent sandridge formations, which rise as much as 30 feet above the surrounding floodplain. Scotco soils are excessively drained and droughty, coarse sands (Brown 1977, Festerwand 1981). Many of the natural Scotco sandridge habitats are highly disturbed or have been destroyed by row-crop agriculture and construction of buildings or roads.

The presence of *Cyperus grayioides* and certain of its associates on the Scotco sandridges of southeastern Missouri indicates a floristic affinity with sandridges of eastern Texas and adjacent Louisiana and sand prairies of central and northern Illinois (Bowles et al. 1986, Bridges and Orzell 1989). Furthermore, it is interesting to note that prairie vegetation originally occurred to a limited extent in southeastern Missouri on these coarse sandy soils (Brown 1977).

## CYPERUS GRAYIOIDES NEW TO MISSOURI

*Cyperus grayioides* Mohl. is an obscure member of *Cyperus* section *Laxiglumi*, which until recently was poorly known and infrequently collected. It was originally described from sand-prairies of northwestern Illinois (Mohlenbrock 1959), and its occurrence in eastern Texas and Louisiana on xeric sandridges was subsequently documented in a thorough taxonomic treatment of *Cyperus* section *Laxiglumi* by Marcks (1972). More recently, additional populations in eastern Texas were reported (Bridges and Orzell 1989). *Cyperus grayioides* is listed among "candidates for possible addition to the List of Endangered and Threatened Plants," category 2, by the U. S. Fish and Wildlife Service (1990). It was thought that the Texas and Louisiana populations were disjunct by a distance of more than 850 km from the nearest Illinois sites.

*Cyperus grayioides* has not been previously recorded from the state (Yatskievych and Turner 1990). It is locally abundant on open, Scotco sands in southeastern Missouri, where it is associated with the following species: *Cenchrus longispinus* (Hack.) Fern., *Coryza canadensis* (L.) Cronq., *Croton glandulosus* L., *Cycloloma atriplicifolium* (Spreng.) Coulter, *Cyperus lupulinus* (Spreng.) Marcks ssp. *lupulinus*, *C. lupulinus* ssp. *macilentus* (Fern.) Marcks, *Diodia teres* Walter, *Eragrostis cilianensis* (All.) Vign. ex Jan-chen, *Euphorbia dentata* Michaux, *Froelichia floridana* (Nutt.) Moq. var. *campestris* (Small) Fern., *Helianthus petiolaris* Nutt., *Heterotheca subaxillaris* (Lam.) Britton & Rusby, *Monarda punctata* L., and *Opuntia humifusa* Raf.

A distribution map based upon examination of specimens (ILL, MO, NLU, TEX-ILL, VSC) and other data (Mohlenbrock 1959, Marcks 1972, Bowles et al. 1986, Bridges and Orzell 1989) is shown in Figure 1. Collection data for *Cyperus grayioides* in Missouri are given below.

MISSOURI. Mississippi Co.: 0.2 mi E of jct of county roads 408 and 433, S of county road 408 by about 0.2 to 0.4 mi, T26N R14E S26, rim of sandy ridge around pine thicker and along old fence row, open, highly disturbed area, 26 Sep 1990, Bryson 10472 (ctb-personal herbarium of C.T. Bryson, MO, VDB, VSC); 0.5 mi W of jct of county road CC and hwy I-57/US 60, just N of hwy I-57, near Scott-Mississippi county line, 26 Sep 1990, Bryson 10474 (ctb, VSC). New Madrid Co.: sandy rise in floodplain, E of hwy I-55 frontage road, 1.0 mi S of Sikeston city limit, T25N R14E NW¼ S3, locally common on loose sand, 27 Aug 1989, Carter 8263 (IBE, MO, SMU, VDB, VSC); sandy rise in floodplain, E of hwy I-55 frontage road, 0.8 mi S of Sikeston city limit, T26N R14E SW¼ S34, 36° 50' 41" N, 89° 31' 52" W, locally abundant on loose sand, 27 Aug 1989, Carter 8267 (IBE, MICH, MO, NY, NYS, SWSL, SMU, US, VDB, VSC, WIS); 6.6 to 7.1 mi N of jct of hwy MO 80 and county road AA, S of Sikeston city limits, E of hwy I-55, T25N R14E NE¼ S3, open sandy area, 26 Sep 1990, Bryson 10460 (ctb, IBE, MICH, MO, SMU, SWSL, VDB, VSC); 4.7 mi N of jct of hwy MO 80 and county road AA, S of Sikeston, T25N, R14E, NW¼ S11, open sandy area, 26 Sep 1990, Bryson 10462 (ctb, VDB, VSC); 6.6 mi N of jct of hwy MO 80 and county road AA, S of Sikeston; T25N R14E S3, along E side of county

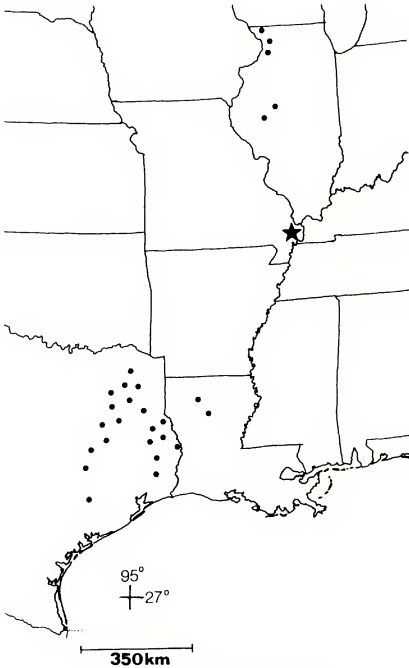


FIG. 1. The distribution of *Cyperus grayioides*.

road AA, open gentle slope at base of sandridge, sandy soil, 27 Sep 1990, *Bryson 10509* (ctb, VDB, VSC). Scott Co.: 0.2 mi W of jct of hwy MO 77 and county road 514, T27N R15E SE $\frac{1}{4}$  S5, sandy soil in ditch along county road 514, 26 Sep 1990, *Bryson 10478* (ctb, MO, VDB, VSC); 2.1 mi E of Blodgett city limit and jct of county roads 514 and H, T27N R15E SW $\frac{1}{4}$  S6, open areas along roadside, crest and slopes of sandy ridge N of county road 514, sandy soil, 26 Sep 1990, *Bryson 10481* (ctb, MO, SMU, VDB, VSC) and 10483 (ctb, IBE, MICH, MO, NLU, NYS, SMU, SWSL, TAES, US, VDB, VSC); 1.8 mi SSE of hwy I-55 and county road H by dead end, unnumbered access road, T27N R14E SW $\frac{1}{4}$  S34, gentle slope near road, open sand, 26 Sep 1990, *Bryson 10498* (ctb, VDB, VSC).

## CYPERUS RETROFLEXUS NEW TO MISSOURI

*Cyperus retroflexus* Buckley [= *Cyperus uniflorus* Torrey & Hooker, *non* Thunberg (*vide* Tucker 1987)] ranges from northern Mexico into New Mexico and throughout much of Texas and eastward into Oklahoma, Arkansas, and Louisiana (Carter, in prep.). Recently, it has been reported from Mississippi and Alabama (Carter, Bryson and Lipscomb 1987). During September 1990, an extensive population of *Cyperus retroflexus* was discovered growing on a Scotco sandridge in Mississippi County, Missouri. This species has not been previously reported from Missouri (Yatskievych and Turner 1990). Collection data for *C. retroflexus* in Missouri follow.

MISSOURI. Mississippi Co.: 0.2 mi E of jct of county roads 408 and 433, S of county road 408 about 0.2 to 0.4 mi, T26N R14E S26, along top of sandy ridge, around pine thicket and along old fence row, most of area highly disturbed and open, 26 Sep 1990, Bryson 10473 (ctb, IBE, MICH, MO, NLU, SMU, SWSL, TAES, VSB, VSC).

ADDITIONAL RECORDS OF CYPERUS  $\times$  MESOCHORUS

During 1989, plants with sharply angled, scabrid culms; ascending bracts; and multiple, pedunculate inflorescence rays were located in New Madrid County, Missouri, along an open roadside and edge of an adjacent field in coarse sandy soil of the Scotco series (Brown 1977, Festervand 1981), only about one-half mile from the aforementioned *Cyperus grayioides* site.

Initially, these plants were placed with *Cyperus schweinitzii* Torrey; however, a critical examination indicates they are actually *Cyperus*  $\times$  *mesochorus*, a hybrid between *C. schweinitzii* and *C. lupulinus* (Spreng.) Marcks ssp. *lupulinus* (Marcks 1974). *Cyperus*  $\times$  *mesochorus* Geise is rare in Missouri, and has not been previously reported from the southeastern quadrant of the state (Steyermark 1963, Yatskievych and Turner 1990).

*Cyperus*  $\times$  *mesochorus* was found growing with only one of its putative parents, *Cyperus lupulinus* (Spreng.) Marcks ssp. *lupulinus*. However, its sharply angled, scabrid culms and ascending spikelets leave little doubt that *C. schweinitzii* is its other parent. Although it is disconcerting that *C. schweinitzii* was not found at any of these sites, this kind of problem is not unprecedented in Cyperaceae (Cayouette and Morisset 1985). Moreover, further investigation may document the occurrence of *C. schweinitzii* in the vicinity, which would be similar to a situation in *Carex* described by Catling et al (1989).

These plants also exhibit reduced fertility (ca 50% mean seed set) when compared with *Cyperus schweinitzii* ( $\geq 94\%$ ), which indicates a hybrid origin. The low fertility observed in this southeastern Missouri population is consistent with observations of Marcks (1974). Additionally, a number

of the specimens are intermediate and difficult to place taxonomically, which suggests that introgression, as documented by Marcks (1974), has occurred.

Thus, we hypothesize that (1) *Cyperus schweinitzii* is rare in southeastern Missouri and was overlooked in our brief field work; (2) the intermediate plants have been formed by backcrossing between F1 hybrids and either or both parents; and (3) *C. × mesochorus* is the result of hybridization or introgression between *Cyperus schweinitzii* and *Cyperus lupulinus* ssp. *lupulinus*. Collection data for *Cyperus × mesochorus* follow.

MISSOURI. Mississippi Co.: 0.2 mi E of jct of county roads 408 and 433, S of county road 408 about 0.2–0.4 mi, T26N R14E S26, rim of sandy ridge around pine thicket and along old fence row, highly disturbed open sand, 26 Sep 1990, *Bryson 10471* (ctb, MO, VDB, VSC). New Madrid Co.: sandy rise in floodplain, E of hwy 1-55 frontage road, 0.4 mi S of Sikeston City limit, T26N R14E NW¼ S34, locally abundant in loose sand, 27 Aug 1989, *Carter 8276* (IBE, MICH, MO, NY, NYS, SMU, US, VDB, VSC); 0.5 mi N of jct of hwy MO 80 and county road AA and 0.25 mi E of county road AA T25N R14E S35, open well drained sandy ridge, 27 Sep 1990, *Bryson 10510* (ctb, VSC).

#### A RECENT COLLECTION OF *CYPERUS CROCEUS*

The correct name for the species long known as *Cyperus globulosus* Aublet is *Cyperus croceus* Vahl (Carter and Kral 1990). In the United States *Cyperus croceus* Vahl is distributed from New Jersey southward throughout Florida then westward into eastern Texas and Oklahoma. It is common in the Atlantic and Gulf coastal plains and occurs sporadically inland into Tennessee and Missouri (Carter, in prep.). *Cyperus croceus* was collected in Missouri in the late 19th and early 20th centuries but apparently has not been collected there since 1910. During 1989, a population of *Cyperus croceus* was located in New Madrid County, Missouri, where it was growing in sandy loam soil in a poorly kept lawn. This collection is the first of its species from Missouri in nearly 80 years. Data for all Missouri specimens of *C. croceus*, which we have examined, are given below.

MISSOURI. Dunklin Co.: "sandboden," without locality, 27 Jul 1893, *H. Eggert s.n.* (MO 759399); without locality, 18 Sep 1893, *Bush 140* (NY); Kennett, 27 Jul 1895, *Bush 683* (NY); Campbell, woods, 7 Sep 1910, *Bush 6222* (NY, US); Malden, sands, 8 Sep 1910, *Bush 6270* (NY, US). New Madrid Co.: New Madrid, poorly kept churchyard about a block W of levee, at corner of Russell and Vandenvender streets, T23N R14E S34, locally common, 27 Aug 1989, *Carter 8261* (MO, VDB, VSC). St. Louis Co.: Allenton, Jul 1889, *G. W. Letterman s.n.* (MO 795915); city of St. Louis: without locality, 12 Jul 1884, *G. W. Letterman s.n.* (NY).

#### PREVIOUSLY UNREPORTED *CYPERUS* HYBRIDS

*Cyperus lupulinus* (Spreng.) Marcks ssp. *lupulinus* × *Cyperus strigosus* L. — Hybrid plants of low fertility (<1%) were found in Scott County

growing with *Cyperus lupulinus* ssp. *lupulinus* and *Cyperus strigosus*. The hybrids were found along a gentle slope between a swale and well drained sandy rise. Furthermore, this site was artificially watered by irrigation runoff. *Cyperus strigosus* was located in the swale, and *Cyperus lupulinus* ssp. *lupulinus* on the sandy rise. Presumably, the artificial water source has produced an intermediate habitat favorable for survival of hybrids. This situation appears to be analogous with the hybridized habitat described by Anderson (1949). The reduced fertility of these hybrids is not surprising since the parents are not closely related. Following are collection data for this hybrid.

MISSOURI. Scott Co.: NW of jct of hwy US 1-55 and US 62 and between Sikeston Inn and I-55, open sandy soil, 25 Sep 1990, *Bryson 10453* (ctb, MICH, MO, SMU, SWSL, VDB, VSC); 1.8 mi SSE of jct of hwy US 1-55 and county road H, by dead-end, unnumbered access road, SW  $\frac{1}{4}$  of SW  $\frac{1}{4}$  of Sec. 34, T27N, R14E, open sandy soil, gentle slope near road, 26 Sep 1990, *Bryson 10500* (ctb, VSC).

*Cyperus grayioides* Mohl.  $\times$  *Cyperus lupulinus* (Spreng.) Marcks ssp. *macilentus* (Fern.) Marcks. — A single completely sterile hybrid plant was found growing with *Cyperus grayioides*, *C. lancastriensis* Porter in Gray, and *C. lupulinus* ssp. *lupulinus*. This plant is apparently an F1 hybrid between *Cyperus grayioides* and *Cyperus lupulinus* (Spreng.) Marcks ssp. *macilentus* (Fern.) Marcks and is intermediate between these taxa with respect to spikelet posture and anther length. Following are collection data for this hybrid.

MISSOURI. Scott Co.: 0.2 mi W of jct of Hwy MO 77 and county road 514, T27N, R15E, SE  $\frac{1}{4}$ , Sect. 5, sandy soil in ditch along county road 514, 26 Sep 1990, *Bryson 10479* (ctb).

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